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Operating Systems

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<div align="center">OS HW1</div>

1. The two main functions of an operating system are providing abstractions to user programs and managing the computer's resources

3. Time sharing programs switch between all programs all the time to work on every task at the same time, while multiprogramming systems work on a job until there is a block, when it then switches to work on another job while the other one waits.

10. When running in kernel mode, the CPU can execute every instruction in its instruction set and use every feature of the hardware. When in user mode, only a subset of the instructions to be executed and a subset of the features to be accessed. Having two distinct modes allows for certain restricted actions to only be allowed from a certain mode in the computer, making it easier to do operating system only tasks from the specific kernel mode.

12. a) Disable all interrupts and d) Change the memory map.

17. The TRAP instruction switches from user mode to kernel mode and starts the operating system. It is used in the operating system to help start up the computer into the correct mode and instruction, and then switch back to the user mode with the user program instructions after completion.